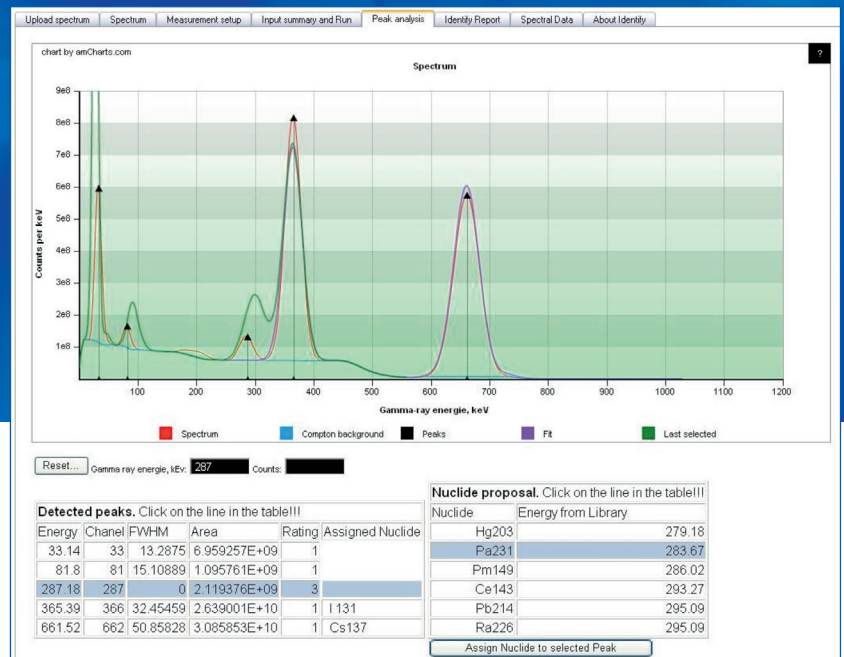


WESPA – Web Spectrum Analyser



WESPA

WESPA (**Web-based Spectrum Analyser**) is an interactive peak-search based gamma spectrum analysis tool.

Through an intuitive interface, it allows the user to assist in the identification process. One of the basic principles is the use of dedicated gamma libraries for nuclides to be expected in the sample. This simplifies the analysis process and allows for fast identification of the nuclides concerned. The specific nuclide libraries can be created with Nucleonica's library creation tool. In addition, a general library can be used where there is no information on the sample content available. WESPA can process spectral files with the IAEA *.spe format directly. Other formats need to be first converted using the Cambio file converter application in Nucleonica. The program includes peak search, energy, efficiency, and FWHM calibration. Energy dependent efficiencies are calculated from the detector supplier data and information about source matrix and absorbers.

The WESPA web application provides a wide range of advantages for the user as well as the developers. The proven user-friendliness of the Nucleonica applications is a key feature – the user can concentrate on the science rather than on the computing. In addition, learning times are kept to a minimum making WESPA a standard for education and training.

The WESPA gamma spectrum analysis and nuclide identification module is aimed primarily at education and training within the field of nuclear security. For simplicity of use, a number of sample gamma spectra are available for test purposes. Inexperienced users can start by analysing these spectra and obtaining a first list of possible matching nuclides. Through this "learning by doing" process, students obtain direct, first-hand experience in the problem of gamma spectrum identification. Within this context, the Gamma Spectrum Generator (GSG) in Nucleonica is also of interest. With this tool, the user can generate gamma spectra for any mixture of radionuclides. With WESPA the aim is the opposite: starting with a gamma spectrum, the goal is to identify the nuclides. By combining the GSG and WESPA modules, students have a powerful combination of tools for spectrum creation and analysis. With these tools, many of the problems encountered in gamma spectrum analysis for nuclear security can be demonstrated. The WESPA gamma spectrum analysis module is under continuous development through a collaboration between the Nucleonica team and international experts in the field of radionuclide identification.

118	Uuo	Uuo 294	0.69 ms	0.110
117	Uuo	Uuo 293	14 ms	0.110
116	Uuo	Uuo 292	16 ms	0.110
115	Uuo	Uuo 291	16 ms	0.110
114	Uuo	Uuo 290	16 ms	0.110
113	Uuo	Uuo 289	0.22 s	0.110
112	Uuo	Uuo 288	0.48 s	0.110
111	Uuo	Uuo 287	160 ms	0.110
110	Uuo	Uuo 286	160 ms	0.110
109	Uuo	Uuo 285	5.5 s	0.110
108	Uuo	Uuo 284	480 ms	0.110
107	Uuo	Uuo 283	100 ms	0.110
106	Uuo	Uuo 282	100 ms	0.110
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16	Uuo	Uuo 192	100 ms	0.110
15	Uuo	Uuo 191	100 ms	0.110
14	Uuo	Uuo 190	100 ms	0.110
13	Uuo	Uuo 189	100 ms	0.110
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8	Uuo	Uuo 184	100 ms	0.110
7	Uuo	Uuo 183	100 ms	0.110
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5	Uuo	Uuo 181	100 ms	0.110
4	Uuo	Uuo 180	100 ms	0.110
3	Uuo	Uuo 179	100 ms	0.110
2	Uuo	Uuo 178	100 ms	0.110
1	Uuo	Uuo 177	100 ms	0.110

DID YOU KNOW

- WESPA is based on the highly accurate nuclide identification software "Identify" developed by J. Brutscher at gbs-elektronik in cooperation with R. Arlt from the IAEA.
- The software has been evaluated by IAEA experts and is used in the agency to resolve identification cases which can not be solved by EU member states.

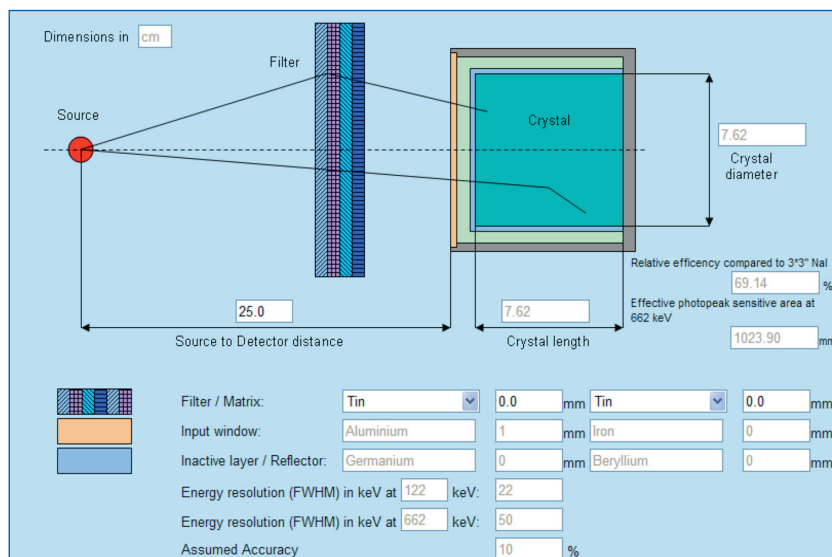
The **first step** in the identification process is to upload a spectrum. For testing purposes, the user can select a number of pre-defined or sample spectra.

In the **second step**, the user should select the type of detector used during the measurement of the spectrum and also should specify or create a nuclide library containing a list of gamma lines from the expected nuclides.

In the **third step**, the user should run WESPA to make a peak search and to prepare a nuclide proposal for each peak based on the selected library. Thereafter, through the user friendly interface, the user can check the proposal for each peak and how the proposed nuclide fits the peak. The user can accept or refuse the proposal.

WESPA profits from the latest internationally evaluated nuclear data available in Nucleonica. In addition, full standardised technical documentation is provided in the Nucleonica wiki. Users can post questions, comments, and suggestions in the Nucleonica forum and obtain answers from experts in the field.

More information can be found on the Nucleonica wiki at www.nucleonica.com/wiki



47	Ag	Ag 107.8682	Ag 93	Ag 93 >1.5 μs	Ag 94	Ag 94 (34.5 h) 1.08 μs	Ag 95	Ag 95 1.5 s	Ag 96	Ag 96 4.48 s
48	Cd	Cd 112.411	Cd 97	Cd 97 2.8 s	Cd 98	Cd 98 1.5 s	Cd 99	Cd 99 1.5 s	Cd 100	Cd 100 1.5 s
49	In	In 114.918	In 98	In 98 1.5 s	In 99	In 99 1.5 s	In 100	In 100 1.5 s	In 101	In 101 1.5 s
50	Sn	Sn 118.710	Sn 119	Sn 119 1.5 s	Sn 120	Sn 120 1.5 s	Sn 121	Sn 121 1.5 s	Sn 122	Sn 122 1.5 s